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Nurses' Research Utilization Barriers, Facilitators and Determination of Affecting Factors

Hemşirelerin Araştırma Kullanım Engelleri, Kolaylaştırıcıları ve Etkileyen Etmenlerin Belirlenmesi

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ABSTRACT Objective: Research utilization is a major component in nursing practices however it is known that research results are not employed sufficiently. Nurses need to utilize the research results for safe and excellent care. The purpose of this research is to determine barriers, facilitators and factors affecting research utilization by clinic nurses. **Material and Methods:** It is a descriptive and cross-sectional research. The sample of the research was constituted by 523 nurses (accessibility: 52.3%) providing patient care at the clinics of a total of nine hospitals consisting of one university hospital, two public hospitals and six private hospitals. The data were collected by means of Research Utilization Barriers Scale and the structured questionnaire. Descriptive statistics and Kruskall Wallis test and Mann Whitney-U test were used to analyze the data. **Results:** The clinic nurses emphasized as the most important barrier that "the nurse does not have time to read research" (78.2%). They also stated that the most important facilitators in respect to research utilization were "easy access to internet and research results" and "institutive and administrative support for research activities". This study revealed that nurses perceived the settings and the lack of time as the greatest barriers in using research findings. **Conclusion:** The primary research utilization barrier is related to setting. With the intent of increasing the research utilization, it can be suggested to make necessary arrangements in terms of providing easy access to research results for nurses and increasing corporate and management support.

Keywords: Nurses; evidence-based nursing; nursing research; hospitals

ÖZET Amaç: Araştırma kullanımı hemşirelik uygulamalarının önemli bir bileşeni olmakla birlikte, araştırma sonuçlarının yeterince kullanılmadığı bilinmektedir. Hemşirelerin araştırma sonuçlarını güvenli ve etkili bir bakım için kullanmaları gerekmektedir. Bu araştırmanın amacı klinik hemşirelerin araştırma kullanımını etkileyen engelleri, kolaylaştırıcıları ve faktörleri belirlemektir. **Gereç ve Yöntemler:** Tanımlayıcı ve kesitsel türde bir araştırmadır. Araştırmanın örneklemini, bir üniversite, iki devlet ve altı özel hastane olmak üzere toplam dokuz hastanenin kliniklerinde hasta bakımı veren 523 hemşire (ulaşılma oranı: %52,3) oluşturmuştur. Veriler Araştırma Kullanım Engelleri Ölçeği ve yapılandırılmış soru formu ile toplanmıştır. Verilerin analizinde tanımlayıcı istatistikler, Kruskall Wallis ve Mann Whitney-U testleri kullanılmıştır. **Bulgular:** Klinik hemşireleri "araştırma okuyacak zamanlarının olmaması"nı (%78,2) en önemli engel olarak belirtmişlerdir. Ayrıca, araştırma kullanımında en önemli kolaylaştırıcıların "internet ve araştırma sonuçlarına ulaşma kolaylığı" ve "araştırma faaliyetleri için kurum ve yönetici desteği" olduğunu belirtmişlerdir. Bu çalışma hemşirelerin araştırma sonuçlarını kullanmada, zaman sıkıntısı ve kurumları en büyük engel olarak algıladıklarını ortaya koymuştur. **Sonuç:** Birincil araştırma kullanım engeli kurum ile ilgilidir. Araştırma kullanımını artırmak için hemşirelerin araştırma sonuçlarına kolay ulaşmalarının sağlanması, kurum ve yönetim desteğinin arttırılması açısından gerekli düzenlemelerin yapılmasını önerilebilir.

Anahtar Kelimeler: Hemşireler; kanıta dayalı hemşirelik; hemşirelik araştırması; hastaneler

Research is a major tool for scientific development. The scientific knowledge acquired through research is supposed to affect and develop nursing practice encouragingly. The employment of research-based knowledge is accepted in nursing practice. However, it is well-known

that traditional practices and rituals have been guiding professional techniques in many countries all over the world.[1] In studies performed in Turkey, nurses believe that new techniques were required in patient care. They requested the research results to be shared, as they were willing to utilize them.[2-8] However, it is obvious that the primary sources of information such as experience, instuition, discussion and observation are non-scholarly resources.[7,9] The utilization of research results in nursing practice has gained a remarkable importance when applications by nurses are considered. Various studies were performed in association with opinions and attitudes of nurses regarding research utilization, their status of utilizing research results and factors affecting all these mentioned.[2-4,10] However, relevant studies revealed that utilization of research results by nurses is not at the desired level.[1-11]

In the studies performed in Turkey, nurses have reported that lack of necessary authority to take initiative in practices and of time to read and implement research in job are among the research utilization barriers. Moreover, nurses have also language barrier as research reports and articles are written in English.[2,5] On the other hand physicians would not cooperate with common implementations, relevant literature would not be collected in one place, and administrators would not allow implementation.[2,6,7,9] These results emphasize the necessity to take crucial actions to define the barriers to utilization of research in nursing.

Utilization of research to realize changes in nursing depends on the level of awareness, consensus among nurses at all levels and elimination of barriers.[4,7] Therefore, it is obvious that the planned change is needed in nursing to promote research utilization. Change models, such as the CURN Project, Stetler Model, Iowa Model, Ottowa Model, and Parish Model, which will be used to create the planned change, have become controversial.[8]

In regards to the utilization of the research results, defining the barriers and facilitators, and the influential factors can mutually assure designation of a planned change model with results and of an increase in research utilization with intended applications.

MATERIAL AND METHODS

STUDY PARTICIPANTS AND DESIGN

The aim of the study is to determine the barriers, facilitators, and influential factors associated with utilization of research results by nurses. This is a descriptive and cross-sectional study to define the barriers, facilitators, and influential factors associated with utilization of research results by nurses.

This research was conducted with nurses who have been working for at least one year in clinics of nine different hospitals, including one university hospital, two public hospitals and six private hospitals located in the center. The population consisted of 1000 nurses working in clinics at hospitals located in the center of Antalya and providing service for at least one year. The nurses selected from each institution in the population were included in the sample by using stratified sampling. Accordingly, the sample size was 500 nurses, which was calculated using a 95% confidence interval, β= 0.20 and α= 0.05 significance level. The research was conducted with 523 nurses.

DATA COLLECTION PROCEDURE

The data were collected using the (1) Research Utilization Barriers Scale, (2) the structured questionnaire form which including research activities and the most important barriers and facilitators of research utilization of nurses. The questions related to personal characteristics (sex, age, marital status, etc.), occupation (educational background, work duration, work organization, clinic, etc.) and research activities (scientific research, following issues that are relevant to nursing, etc.) were part of the questionnaire.

The Research Utilization Barriers Scale was developed by Funk, Champagne, Wiese and Tornquist in 1991 (The Barriers Scale). The scale consists of 28 items and four subscales, including nurse (8 items), settings (8 items), research (6 items) and presentation (6 items).[12] The nurse subscale refers to the value that the nurses assign to research as

well as their skill and awareness. The institutive subscale refers to perceived barriers in the work environment and limitations. The research subscale refers to the quality of the research. The presentation subscale refers to comprehensibility and usability. Items are on a 5-point Likert scale, with responses ranging from 0 to 4 (*0: no idea, 1: not a barrier at all, 2: small barrier, 3: medium barrier, 4: big barrier*). Since the English language is a potential barrier for Turkish-speaking nurses, as used in previous studies.[2,6] This study includes items such as "research reports/articles are written in a foreign language" and "the amount of research information is overwhelming". Since the results of this research could be compared with studies using the same scale, as proposed by Funk; these items and responses on which respondents had no idea, were not included in statistical analyses but were only reported in the descriptive statistics.[12]

The evaluation of the scale was completed through percentage of responses given by nurses to each item and average scores. There is no cut off score of the scale. The more the score average increased, the more levels of the perception as a barrier increased. The Cronbach's alpha values of the specific scale of Funk and his friends ranged between 0.60 and 0.80.[12] Turkish version of the scale which was adapted by Temel et al. was used in this research.[5] The Cronbach's alpha value of the Turkish version of the original scale was 0,92 and ranged from 0,73 to 0,80 on the subscales. The Cronbach's alpha values in our study ranged between 0,70 and 0,78. The data was gathered between November 1, 2012 and November 1, 2013 via the questionnaire that was collected in a closed envelope to ensure privacy.[5]

ETHICAL CONSIDERATIONS

Necessary permission was received A University Noninvasive Clinical Studies Ethics Committee (B.30.2.AKD.0.20.05.05/128) and from Bayik to use the Research Utilization Barriers Scale in this study. Institutional permission was also received in each hospital where the research was conducted. In addition, written consent was obtained from the nurses in the sample group.

DATA ANALYSIS

The data were evaluated using SPSS (18.0) for Windows. In this study, the Cronbach's alpha coefficient was calculated in the reliability test of the sub-dimensions of the Research Utilization Barriers Scale. The results of the scale for each item and subscales were obtained as numbers, percentages and means. The items were listed according to the rates of perceptions as "medium" and "high" level barriers. Kruskall-Wallis and Mann-Whitney U tests were used to compare nurses' results regarding utilization barriers according to their demographic and working characteristics as well as participation in research activities. The qualitative data acquired via open-ended questions were used to identify the nurses' research barriers and facilitators. These opinions were examined by the researchers separately and were presented as numbers and percentages.

RESULTS

NURSES' CHARACTERISTICS

The mean age of the nurses in the study was 31.31±7.74 years, and their mean duration of employment was 10.0±7.93 years. Additionally, 94.1% of them were women and 62% were married. Furthermore, 46.3% of the nurses in the study worked at state hospitals, 40.2% worked at internal clinics, 37.3% worked at surgical clinics, and 22.5% worked at intensive care units, operating room and emergency units.

NURSES' PARTICIPATION IN RESEARCH ACTIVITIES

In this study, 40.5% of the nurses spoke a foreign language, 51.1% attended a research course during their nursing education, 32.3% completed a thesis/research during their education, and 36.1% attended a scientific conference in the recent year. Regarding attendance at scientific conferences in the last year, 54.1% (n=157) attended once, 91.6% attended only as a listener, and 5.8% attended with a poster (n=191). It was also found that 37.3% of the nurses listened to a nursing-related research presentation in the last year, 24.9% read a nursing-related research article in last six months, 18% conducted a research after graduation, and 7.5%

attended a research course after graduation and performed only one activity in all fields of interest. It was noticed that there was a nursing research journal read by 5.5% of the nurses regularly. In addition, when the opinions of the nurses were reviewed with respect to the statement "nursing practices must be based on research" (n=523), it was found out that 63.1% of them shared this opinion and 9.6% of them read a scientific publication and utilized the results of research in practice.

IDENTIFICATION OF RESEARCH UTILIZATION-RELATED BARRIERS AND FACILITATORS

Averages and standard deviations of the scores on the four dimensions of the Research Utilization Barriers Scale were determined according to barrier perception levels as setting 2.45 (0.63), presentation 2.08 (0.79), nurse 2.06 (0.75), and research 1.79 (0.86). Nurses' perceptions of research utilization barriers are shown in Table 1. Seven of the top ten items that nurses perceived as research utiliza-

TABLE 1: The distribution of the reported barriers to research utilization by nurses (n=523).

Item	Subscale	Barriers	Mean ± SD	Reporting item as moderate and great barrier n (%)	No opinion n (%)
29	S	The nurse does not have time to read research	3.25±0.94	409 (78.2)	10 (1.9)
7	S	There is insufficient time on the job to implement new ideas	2.67±1.12	291 (55.6)	3 (0.6)
13	S	The nurse does not feel she/he has enough authority to change patient care procedures	2.48±1.06	243 (46.5)	5 (1)
6	S	The facilities are inadequate for implementation	2.48±1.06	243 (46.4)	2 (0.4)
18	S	Physicians will not cooperate with implementation	2.44±1.12	245 (46.9)	16 (3.1)
25	S	Other staff is not supportive of implementation	2.37±1.14	228 (43.6)	27 (5.2)
15	N	The nurse is isolated from knowledgeable colleagues with whom to discuss the research	2.35±1.20	237 (45.3)	32 (6.1)
12	P	The relevant literature is not compiled in one place	2.33±1.34	255 (48.8)	74 (14.1)
14	S	The nurse feels that results are not to own setting	2.26±1.09	213 (40.7)	27 (5.2)
30	**	Research reports/article are written in English	2.20±1.25	222 (42.5)	59 (11.3)
26	N	The nurse is unwilling to change/try new ideas	2.17±1.21	204 (39.0)	28 (5.4)
1	P	Research reports/articles are not readily available	2.17±1.17	201 (38.4)	30 (5.7)
3	P	Statistical analyses are not understandable	2.13±1.23	210 (40.1)	63 (12.0)
16	N	The nurse sees little benefit for self	2.12±1.25	210 (40.1)	59 (11.3)
11	R	The research has methodological inadequacies	2.10±1.23	205 (39.1)	72 (13.8)
24	P	The research is not reported clearly and readably	2.08±1.19	183 (35.0)	59 (11.3)
28	N	The nurse does not feel capable of evaluating the quality of the research	2.07±1.18	182 (34.8)	29 (5.5)
5	N	The nurse is unaware of the research	2.06±1.14	177 (33.8)	22 (4.2)
17	R	Research reports/articles are not published fast enough	2.04±1.38	209 (40.0)	110 (21.0)
22	R	The conclusions drawn from the research are not justified	2.04±1.14	173 (33.1)	38 (7.3)
20	N	The nurse does not see the value of research for practice	1.99±1.12	162 (31.0)	16 (3.1)
4	P	The research is not relevant to the nurse's practice	1.96±1.29	184 (35.2)	78 (14.9)
21	N	There is not a documented need to change practice	1.94±1.36	198 (37.8)	113 (21.6)
9	N	The nurse feels the benefits of changing practice will be minimal	1.80±1.13	138 (26.4)	56 (10.7)
2	P	Implications for practice are not made clear	1.80±1.22	157 (30.1)	81 (15.5)
27	**	The amount of research information is overwhelming	1.69±1.34	152 (29.1)	138 (26.4)
19	S	Administration will not allow implementation	1.67±1.29	137 (26.2)	120 (22.9)
23	R	The literature reports conflicting results	1.63±1.33	135 (25.8)	154 (29.4)
10	R	The nurse is uncertain whether to believe the results of the research	1.54±1.360	129 (24.6)	163 (31.2)
8	R	The research has not been replicated	1.40±1.29	116 (22.2)	167 (31.9)

***N:** nurse; **S:** setting; **R:** research; **P:** presentation.

**The Barriers Scale does not include these items.

tion barriers were noticed to belong to the setting subscale. The most important barrier item was stated as "the nurse does not have time to read research". The "research reports/article are written in English" item was included among the top ten barrier items (Table 1). In addition to the items on the Research Utilization Barriers Scale, nurses' most important barriers and facilitators are shown in Table 2. Only 37.6% of the nurses who participated in the research answered the open-ended questions. As shown in Table 2, it was found out that responses of the nurses relating to research utilization barriers supported the results acquired via the Research Utilization Barriers Scale. The nurses specified the following factors as research utilization facilitators: "easy access to the internet and research results" (20.8%, n=41), "institutive and administrative support" (20.3%, n=40), and "to be motivated and supported on research activities" (18.8%, n=37).

REVIEW OF THE FACTORS AFFECTING RESEARCH RESULTS UTILIZATION

In this section, the average scores of the nurses on the four subscales of the Research Utilization Barriers Scale were compared considering their demographic and working characteristics and participation in research activities. A statistically significant difference was found in marital status, educational background and participation in a scientific conference in the previous year (Table 3). Nurses who are married who have undergraduate and graduate education and attend scientific meetings have higher scores for research use barriers. No statistically significant difference was found between the groups in age, gender, year of gradua-

TABLE 2: Nurses' opinions on the most important barriers and facilitators regarding research utilization.

Barriers	**n (%)***
There is insufficient time on the job to implement new	130(27.4)
Lack of institutive and administrative support	70(14.7)
There is too much workload at the clinics	55(11.6)
Personnel problems	44(9.3)
The nurse sees little benefit for self	37(7.8)
Nurse doesn't have conscious to research	28(5.9)
Occupational problems	26(5.5)
Inability to reach researches and results of researches	22(4.6)
Lack of staff support	22(4.6)
Lack of information about the research process, lack of research training	20(4.2)
Research reports/article are written in English	17(3.6)
Lack of financial support for researches	4(0.8)
Total	475(100.0)
Facilitators	**n (%)**
Easy access to internet and research results	41(20.8)
Provision of institutive and administrative support	40(20.3)
Institutive motivation and encouragement for nurses	37(18.8)
Nurses have conscious to research and have enough time to research	20(10.2)
Establishment of research units, giving education about the research process	19(9.6)
The research is reported clearly and readably	11(5.5)
Providing team collaboration	8(4.0)
Reducing workload of nurses	7(3.6)
Improvement time and work conditions	7(3.6)
Increase of opportunities	7(3.6)
Total	197(100.0)

* The percentages has been gotten over the number of total responses.

TABLE 3: The comparison of the nurses' characteristics and research utilization barriers subscales scores (n=523).

Nurses' Characteristics	Research Utilization Subscale							
	Setting		Presentation		Nurse		Research	
Marital Status	**n**	**x̄± SD**	**n**	**x̄±SD**	**n**	**x̄± SD**	**n**	**x̄± SD**
Married	324	2.50(0.60)	324	2.11(0.80)	324	2.11(0.74)	324	1.82(0.88)
Single	199	2.37(0.67)	199	1.94(0.76)	199	1.98(0.77)	199	1.75(0.83)
	U*	28222.50		27471.50		28549.00		30760.00
	p	.017		.004		.028		.378
Level of education	**n**	**x̄± SD**	**n**	**x̄± SD**	**n**	**x̄± SD**	**n**	**x̄± SD**
High school level	139	2.22(0.65)	139	1.89(0.77)	139	1.79(0.65)	139	1.62(0.82)
Associate's degree	64	2.46(0.62)	64	1.97(0.84)	64	2.11(0.74)	64	1.76(0.88)
Bachelor of science in nursing (BSN)	291	2.56(0.61)	291	2.13(0.80)	291	2.16(0.79)	291	1.88(0.90)
Graduate	29	2.54(0.53)	29	2.09(0.65)	29	2.18(0.60)	29	1.82(0.50)
	KW**	25.95		11.89		28.33		9.54
	p	.000		.008		.000		.024
Settings	**n**	**x̄± SD**	**n**	**x̄± SD**	**n**	**x̄± SD**	**n**	**x̄± SD**
State	242	2.55(0.62)	242	2.08(0.81)	242	2.11(0.78)	242	1.85(0.90)
University	120	2.48(0.60)	120	2.14(0.77)	120	2.17(0.76)	120	1.84(0.89)
Private	161	2.28(0.64)	161	1.93(0.78)	161	1.91(0.69)	161	1.66(0.78)
	KW	18.25		6.55		11.62		5.04
	p	.000		.038		.003		.080
Participation in a scientific congress in the recent year	**n**	**x̄± SD**	**n**	**x̄± SD**	**n**	**x̄± SD**	**n**	**x̄± SD**
Participated	189	2.46(0.67)	189	2.12(0.78)	189	2.15(0.74)	189	1.88(0.83)
Did not participate	334	2.45(0.61)	334	2.01(0.80)	334	2.01(0.76)	334	1.74(0.88)
	U	3135.25		2910.60		2788.90		2822.15
	p	.899		.138		.027		.044

***U=** Mann-Whitney U test.

****KW=** Kruskal-Wallis test.

tion, research activities, attending a research lesson, conducting research during their education, listening to a research presentation in the last year, reading a research publication in the last 6 months, conducting research after graduation, participating in a research course after graduation, and speaking a foreign language.

DISCUSSION

In this study, participation in research activities among clinical nurses as well as their opinions regarding nursing practices based on research, research utilization barriers and facilitators, and influential factors of research utilization were investigated.

NURSES' PARTİCİPATİON İN RESEARCH ACTİVİTİES

In this study, 36.1% of the nurses participated in a professional scientific conference in the previous year. It is a similar result with all other studies performed in Turkey except two different ones where this ratio was higher.[3,7,8,13,14] Within the scope of this study in regards to reading researches about nursing it is determined that in the last six months nurses have read less publications and journals. Similar results have been found in other studies.[4-8,13-17] In this study, one piece of important research data relevant to the research activities was nurses' researching cases. The rates of clinical nurses' researching cases were found to be higher than those reported in other studies performed in Turkey.[3,7,8,13] Additionally, it was found in this study that 63.1% of the nurses believed that "nursing practices should be based on research". While similar results were reported in the study performed by Kelleci, et al. it was found in the study performed by Yılmaz and Tel that almost all of the nurses expressed that relevant nursing studies improved practice.[13,14] According to the results of the study performed in our country, a large ratio of nurses expressed a positive opinion of using the results of research in practice. While a large ratio of nurses included in this study had a positive opinion, only 9.6% of them stated that they used the results of research in practice. This result was similar to the results (10.1%) of the study performed by Ozturk et al. The ratio of the nurses pointing that they used the results of the study in patient care was found to be higher in the study performed by Kelleci and his colleagues than the results of this study.[3,13] This difference is crucial, as it draws attention to the necessity for a detailed examination of the results of the research, which need to be examined in terms of many characteristics such as usage in practice, frequency, nature, and fields.

REVIEW OF BARRIERS AND FACILITATORS OF RESEARCH UTILIZATION

When the mean scores of nurses were examined, it was found that the barrier reported by nurses was related to the setting, presentation, nurse and research subscales. It was found out in this study that the setting subscale of the Research Utilization Barriers Scale, including work environmental barrier and limitations, was perceived as the greatest barrier in this study. In the research utilization barriers studies performed in Turkey and other countries, it was found out that the highest average scores were obtained on the setting subscale.[2,4,15-22] Regarding the identification of research results utilization barriers, apart from the average total scale and subscale scores on the Research Utilization Barriers Scale, a detailed examination of the most important barrier items is vital. It was found out that most important barrier statements were given wide coverage in many studies.[2,7,13-15,19-21,23] The top 10 most important barrier perceptions of the nurses were investigated in this study. As a result, it was found out that the first 6 items include the "settings" subscale-related ones (Table 1). Insufficient individual efforts of the nurses and insufficient administrative support could be the reasons for implementation failure. Institutive and administrative supports have been reported as the most important facilitators in research result utilization (Table 2). It can be assumed that the results of other studies included in the literature and the results of this study are parallel in terms of the most important barriers.[2,4,8,13-15,17,21,23] In addition to the items on the Research Utilization Barriers Scale, the most important barriers and facilitators of nurses' research utilization were qualitatively investigated in

this study. It was observed in the evaluation that barrier-related qualitative data were compatible with the first ten reasons included in the items on the Research Utilization Barriers Scale. This result is important in terms of the consistency of responses of the nurses. The nurses stated that easy access to the internet and results of research were the most important factor in facilitating research utilization. They also stated that the institution and management should be supportive of nurses' research activities and encourage nurses to utilize research and increase their motivation (Table 2). This result emphasizes the importance of administrative support in terms of facilitating the utilization of research results. It was stated in Shifaza et al.'s study that the most significant facilitator was administrative support.[16] In the study performed by Yava and his colleagues the nurses recommended that "administration should allow implementation, and research education should be provided". The facilitator signified in the second order of the individual and administrative category is compatible with "to have sufficient time to read research" in the study of Erdogan and Kocaman and with "to have sufficient time for implementation of research results" in the study of Tan et al. The most important facilitators stated in the results of Hweidi et al.'s study were consistent with the results of this study.[6,7,17,22]

The "presentation" subscale, including the perceptions of barriers with regard to the comprehensibility and availability of the study, was identified as the second highest barrier, and it was found out that the result was compatible with the literature.[13,18,21] This result implies that research should be reported clearly and should have the acknowledged characteristics of utilization in nursing.

INVESTIGATION OF FACTORS AFFECTING RESEARCH UTILIZATION

When the effect of nurses' socio-demographic characteristics on their research utilization was examined, the perceptions of barriers of married nurses on the setting, presentation, and nurse subscales were statistically significant (p=0.017, U=28222.50; p=0.004, U=27471.50; p=0.028, U=28549.50; respectively) (Table 3). This is because the increase of the social roles as well as professional roles of nurses, increased their barrier perceptions. Marital status was not evaluated in some studies in which factors affecting research utilization were reviewed.[13-15] It might be suggested that the relationship between marital status and research utilization barriers should be identified more clearly and investigated in studies.

Nurses' education levels affected the research utilization in practice. A significant difference was found on all subscales among high school graduates and people with bachelor's degrees. The nurse subscale of high school graduates and two-year degree graduates and the setting, and nurse subscales of high school graduates and postgraduates are shown in Table 3. It is proved that education level affected the research utilization of nurses in practice. Lack of research lessons in high school and undergraduate education can affect research utilization. Similar results were reported in the literature: the more education level of nurses increase, the more the barrier perceptions of the "nurse" factor increase.[13,15,23] These results imply that the higher the level of education of nurses is, the greater their awareness of barriers regarding research utilization is. It was stated in the systematic review; Squires et al. reviewed individual factors regarding nurses' research utilization and found that research utilization by postgraduate nurses was higher than other nurses.[24] Squires et al. suggested identifying the most influential factors among individual characteristics affecting nurses' research utilization.[24] The authors also stated that variable fields could establish the basis of the interventions that are intended to increase research utilization. All these characteristics could be easily manipulated and implanted in interventions to increase research utilization. It was found in this study that another factor affecting research utilization was the settings where the nurses worked. It was determined that the nurse subscale was an important barrier at all settings. Statistically significant differences were observed on between the "setting", "presentation" and "nurse" subscales and hospitals (p=0.000 KW=18.25; p=0.038, KW=6.55; p=0.003, KW=11.62; respec-

tively). These results suggested that the utilization of research results should be discussed separately at every institution in terms of organizational climate. Similarly, based on the results of this study, the perception of the barrier of the "setting" subscale at university hospitals was found to be high in Niederhauser and Kohr's study.[25] While difference was identified between the settings at which the nurses worked and the perception of barriers, in Hweidi et al.'s study that was conducted with pediatric nurses in 2011, this variable was not investigated in Chien et al.'s study.[15,22] It was emphasized in the systematic review by Meijers et al. on the factors affecting nurses' research utilization that the effect of work environment on nurses' research utilization was basically unclear.[26] The results of our study imply that nurses' research utilization increased; hence, the institutional studies are required. It was revealed that there was a significant difference in the "nurse" and "research" subscales between the nurses attending a conference in recent years compared to ones who did not attend. This is consistent with the literature. It was identified in the systematic review performed by Squires and his colleagues that research utilization among nurses attending conferences and in-service trainings was more than that of those who did not attend them.[26] It was reported in the study by Oztürk et al. that scientific research attendance significantly affected the setting subscale, and the barrier perception of the group that participated in the research was lower than that of those who did not participate in the research.[3] However, it was found in the study performed by Oh that scientific research participation did not affect research result utilization.[20] Taking into account of the results in these studies, it can be said that to identify the relationship between research activity participation and research utilization, new studies at the local and universal scales are needed.

LIMITATIONS

There are a number of limitations in the present study. First, we only evaluated clinic nurses in nine large hospitals and it may be inappropriate to generalize our findings to other populations. Second, reasons, such as lack of requests from nurses to participate in research due to being busy in hospitals, lack of responses to open-ended questions, and the majority of responses given as no idea with respect to some items, may have affected the results of the research. Nevertheless, this is the uncommon study to handle the barriers, facilitators and determination of affecting factors together.

CONCLUSION

In this study that we conducted with clinic nurses, the highest average score among the factors of research utilization barriers was acquired on the "setting" subscale, whereas the lowest average score was acquired on the "research" dimension. It was found that the perceptions of barriers among nurses who were married and working at state hospitals were statistically significant on the "setting", "presentation" and "nurse" subscales. Regarding the nurses who received undergraduate and postgraduate educations, the perceptions of barriers were statistically significant on all subscales. It was determined that the perceptions of barriers of the nurses who participated in a scientific conference in recent year were statisti cally significant on the "nurse" and "research" subscales.

The lack of institutional and administrative support was found the most crucial among the barriers, which was shown among the facilitators. Institutional and administrative support may be important ways to eliminate barriers in putting studies into practice.

The results of this study revealed that many factors should be taken into consideration in research utilization. In other words, in putting the studies into practice, interventions must be well-organized, and the participation of all affected ones should be provided. As a next step, to increase the utilization of research results in practice without ignoring the results of this study, reviewing the change models in terms of research utilization in nursing and using these models to make correct decisions and for advancement have been suggested.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Fatma Cebeci;* ***Design:*** *Fatma Cebeci, Emine Çatal;* ***Control/Supervision:*** *Fatma Cebeci;* ***Data Collection and/or Processing:*** *Fatma Cebeci, Emine Çatal, Gülten Sucu Dağ, Ebru Karazeybek, Nilgün Aksoy;* ***Analysis and/or Interpretation:*** *Gülten Sucu Dağ, Fatma Cebeci, Emine Çatal;* ***Literature Review:*** *Fatma Cebeci, Emine Çatal, Ebru Karazeybek;* ***Writing the Article:*** *Emine Çatal, Fatma Cebeci, Ebru Karazeybek;* ***Critical Review:*** *Fatma Cebeci.*

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